NOTES ON THE FOOD OF THE HORUS SWIFT *APUS HORUS* IN KENYA

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Although most general accounts record *Apus horus* as feeding on aerial insects and other arthropods, there appears to be no detailed information available on the actual food taken. In July 1978 I observed Horus Swifts at three colonies in the Lake Naivasha and Lake Nakuru areas. These colonies ranged in size from only a few pairs at Naivasha to an estimated several hundred at Nakuru. All appeared to be utilizing holes dug by bee-eaters, particularly the White-fronted Bee-eater *Merops bullockoides*. Closer examination of a large bee-eater colony, now almost completely taken over by the swifts, in the northern Baharini section of Lake Nakuru National Park, indicated that many of the swifts were feeding young: swifts circling over the colony and entering burrows could be seen to have their buccal region noticeably distended by the bolus of food they were carrying to the nestlings. In the course of bee-eater banding operations conducted at this colony, 23 Horus Swifts were mist-netted between 16:00 and 17:15 on 5 July 1978. Several of these birds were carrying food to their nestlings but ejected the bolus when they hit the net. Only one bolus (sample 1) hung in the net and was recovered intact. Additional insects (sample 2) were recovered from the mouths of three swifts which had ejected most of the bolus they had been carrying. These two samples yielded a total of 363 and 33 individual arthropods (93 per cent insects) respectively. The individual items were measured (from tip of head to tip of abdomen) and identified to at least family level when possible. Only a subjective estimate of the number of species could be made on the basis of the number of distinctive morphotypes present in the samples. The numbers of individuals and the identifications of the food items are presented in Table 1, and the sizes of the items in Fig. 1.

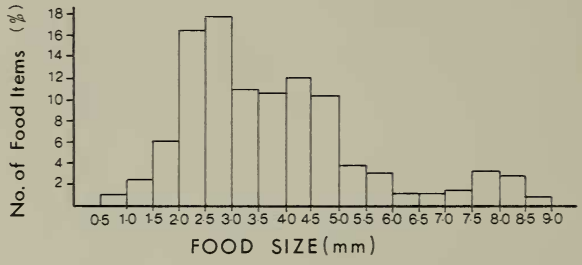

Fig. 1 *Sizes of food items taken by Horus Swifts at Nakuru, Kenya. Sizes are combined in half-millimetre intervals.*

A total of seven orders and 28 families of insects plus 26 spiders was present in sample 1; an additional five families of insects were represented in sample 2 (Table 1). Termites (Termitidae), plant-hoppers (Cicadellidae and Delphacidae) and ants (Formicidae) were the most abundantly represented groups accounting for 79 per cent of the identifiable insects. On the other hand, 23 families were represented in these samples by only a single insect. This diversity in food types is perhaps not unexpected in a group like the swifts, which appear to be highly opportunistic in their aerial foraging. On 9 May

1966, a single food bolus was recovered from a well feathered nestling at Essexvale, Rhodesia (P. Steyn, pers. comm.). The 204 individual insects in this bolus were identified by M. Markus and found to be distributed among at least six orders; 85 per cent of these items were in the Homoptera (Jassidae) or Lepidoptera. These taxa were poorly represented in the Kenya food samples reported here. A high degree of heterogeneity, as well as variation from day to day and season to season, has similarly characterized food samples from other species of swifts (Lack & Owen 1955, Collins 1968 and unpublished).

The sizes of the food items taken by Horus Swifts ranged from 0.8 to 9.0 mm ($\bar{x}$ = 3.71, SD 1.60). The frequency with which the different sized food items were taken was clearly skewed towards the larger sizes (Fig. 1). The modal size food item taken by these swifts was between 2.6 and 3.0 mm; 34 per cent of the food items were between 2.1 and 3.9 mm and 76.7 per cent were between 2.1 and 5.0 mm in length. There is a secondary peak in the distribution of prey sizes taken, between 7.1 and 8.5 mm, which is probably near the maximum prey size these swifts regularly take.

The 23 adult Horus Swifts netted at Nakuru weighed between 25.4 and 31.3 g ($\bar{x}$ = 27.95). The Horus Swift is thus smaller than the Eurasian Swift *Apus apus* (42.8 g, SD 3.44, Gladwin & Nau 1964). Horus Swifts also appear to take a smaller size range of food items than these larger swifts (Lack & Owen 1955, Collins unpublished). The relationship between body size, prey size, and foraging ecology of swifts is currently under investigation (Collins in prep.).

Clearly, additional information is badly needed on the food and feeding habits of most of the several syntopic species of African swifts. Also, since the Horus Swift is unique among swifts in making use of burrows for nesting, it would seem to be deserving of more detailed study than it has received to date.

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TABLE 1

Items identified in two food samples from Apus horus. *The numbers refer to the numbers of individuals in each order and family; those in parentheses refer to the apparent number of species in each family*

	Sample 1	Sample 2
Isoptera	77	-
Termitidae	77 (1)	-
Hemiptera	5	2
Saltidae	1 (1)	-
Nabidae	1 (1)	-
Tingidae	1 (1)	-
Lygaeidae	2 (2)	1 (1)
Miridae	-	1 (1)

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[Table 1 continued

	Sample 1		Sample 2	
Homoptera	144		19	
Cicadellidae	85	(15)	18	(4)
Psyllidae	-		1	(1)
Delphacidae	53	(4)	-	
Debridae	1	(1)	-	
Aphidae	5	(2)	-	
Coleoptera	23		-	
Carabidae	1	(1)	-	
Leiodidae	1	(1)	-	
Scaphidiidae	1	(1)	-	
Staphylinidae	19	(3)	-	
Coccinelidae	1	(1)	-	
Lepidoptera	1		-	
unidentified moth	1	(1)	-	
Diptera	26		4	
Nematocera (unidentified)	2	(2)	-	
Stratiomyidae	1	(1)	-	
Otitidae	1	(1)	-	
Tephritidae	1	(1)	-	
Heleomyzidae	12	(1)	-	
Anthomyiidae	1	(1)	-	
Muscidae	2	(2)	2	(2)
Muscidae (?)	2	(1)	-	
Tachinidae	-		1	(1)
unidentified	4	(?)	1	(1)
Hymenoptera	61		8	
Formicidae	53	(7)	6	(1)
Braconidae	1	(1)	-	
Mymaridae	1	(1)	-	
Eulophidae	4	(3)	-	
Cynipidae	1	(1)	-	
Bethylidae	1	(1)	-	
Scelionidae	-		1	(1)
Trigonalidae	-		1	(1)
Araneida	26		-	
Lycosidae	10	(4)	-	
Clubionidae	5	(2)	-	
Araneidae	1	(1)	-	
Lingphiidae	4	(3)	-	
Theridiidae	4	(2)	-	
Ctenidae	2	(1)	-	

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REQUEST FOR INFORMATION: MONTANE FOREST BIRDS

We would be most grateful to observers in East Africa for help in a computer study we are undertaking. We want to see if the numbers of forest species on different mountain 'islands' are influenced by the same factors that affect species numbers on oceanic islands - for example altitude, isolation, forest area. We have so far looked at data from 75 African mountains, but are in need of more. We require lists of species from individual areas, submitted in whatever format observers find most convenient. If possible, co-ordinates, altitude and approximate forest size should be stated, together with the date visited. Computerization of these data will also provide a base against which future changes of status can be judged. We therefore require lists of recent observations from even the best-known mountains, in case extinctions have occurred in the historical past. Lists and offers of help will be much appreciated, and should be sent to R.J. Dowsett. All records will be acknowledged.

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